

Work Order ID 148829

July 08, 2016 3:54:21 PM

148829

Page 1

Item ID: D145-762-013 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Skidtube with Standard Wearplates Fits LH or RH
 Start Date: 7/8/2016 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 7/15/2016 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: SH Date: 7/8/16 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
IIN-D117-762	E

SH 7/8/16 16-10-13

100 0.00
100 DOCUMENT CONTROL
 DC Memo 0.00
 Doc.Control -USB or Paperwork NEW RED DECAL THAT SAYS "CHG 003 W/DS19731-011 KIT"

DAS
27
9-89

DEC 12 2016

105 0.00
105
 Skidtubes Memo 0.00
 Skidtubes PULL D145-762-013 X1 B128541 FROM QUARANTINE -> del (K) 16/07/16
 REMOVE ALL D3492-055 PLUG ASSEMBLIES
 FULL QTY 2 O0.297 GROUNDING STRAP HOLES WITH WELD AND REDRILL PER D4680 REV E N/A 9/14/16

1x of 21/16/09/10

DART			
1270 ABERDEEN ST. HAWKESBURY ON, CANADA K6A 1K7 TEL: 1-813-632-5200 www.dartmachinery.com			
PATENT	US #5735484 / CA #2222184 / EURO #0828655		
P.N	D145-762-013	CHG	CHG003
DESC	Skidtube STD	STC	SR01853SE
LOT	B128541	STC	
MODEL	BK117 C2	STC	
APPROVAL # 09-89		MADE IN CANADA	
		D2729-4	

B148829

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

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[illegible]

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		OTHER : _____					

Work Order ID 148829

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Page 3

Item ID: D145-762-013**Accept*****N900040100*****Setup Start *NS1*****Revision ID:****Stop *NS2*****Item Name:** Skidtube with Standard Wearplates Fits LH or RH**Start Date:** 7/8/2016 **Start Qty:** 1.00 ***1*****Cust Item ID:****Required Date:** 7/15/2016 **Req'd Qty:** 1.00 ***1*****Customer:****Reference:**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1***Stop *NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
127		0.00							
127									
Powdercoat	Memo	0.00							
Powder Coating	PAINT FINISH PER D4680 REV E								
128		0.00							
128									
QC	QC3 Inspect Part Finish	0.00							
Quality Control	Memo	0.00							
135		0.00							
135									
HandFinish	Memo	0.00							
Hand Finishing	INSTALL DSI9731-011 GHL UPGRADE KIT PER DSI9731 REV A								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		OTHER : _____					

Work Order ID 148829

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Item ID: D145-762-013

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube with Standard Wearplates Fits LH or RH

Start Date: 7/8/2016 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 7/15/2016 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: ²⁴⁰ Process Plan: _____ Date: _____ Tooling: _____ Date: _____Run Start ***NR1***⁰⁷⁸ QC: _____ Date: _____ SPC (Y/N): _____ Date: _____Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
136	QC5- Inspect part completeness to step on W/O	0.00							³⁸ 9-89
136									
QC	Memo	0.00							
Quality Control									DEC 14 2016
145		0.00							
145									
HandFinish	Memo	0.00							
Hand Finishing	VERIFY FIT OD D4682-041/-043/-7 WEARPLATES. REPLACE AS REQUIRED WITH NEW FROM STOCK								
146	QC5- Inspect part completeness to step on W/O	0.00							
146									
QC	Memo	0.00							
Quality Control									^{DAS} 38 9-89 DEC 14 2016

P.T.C.

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☒

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☒ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☒ Supplier ☐ Engineering ☐ Quality ☐ Other ☐							
Date : <u>16-08-15</u>		Step #: <u>145</u>		QTY Effective : <u>①</u>		MRB (QSI042) Approval <u>DAS</u> <u>9</u> <u>9-89</u> <u>16-08-15</u>			
Description Work Order Deviation				Disposition					
<u>Scrap wearplate</u> <u>D4632-041 B123553</u> <u>D4632-043 B123554</u> <u>D4632-7 B132147</u> <u>P.C. old rev.</u> N/A tube will stay & chg w/3				<u>add wearplate to kit</u> <u>D4632-041 _____ 1x</u> <u>D4632-043 _____ 1x</u> <u>D4632-7 _____ 1x</u> <u>** make sure wearplate was fabricate as per Rev C **</u>				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause				FAULT CATEGORY					
Environment ☒ Design ☒ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ ☒ Product Improvement Process Improvement ☐ Manufacturing Process ☐ Past Due ☐				Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ ☒ Fit/Function Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐					
OTHER : _____									

Work Order ID 148829

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Item ID: D145-762-013

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube with Standard Wearplates Fits LH or RH

Start Date: 7/8/2016 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 7/15/2016 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
155	Identify as per dwg & Stock Location: <u>fs081</u>	0.00				<u>DAS</u> <u>27</u> <u>9-89</u>			
155									
Packaging	Memo	0.00							
Packaging	REPLACE RED DECAL WITH NEW DECAL THAT SAYS "CHG 003 W/DSI9731-011 KIT"								
165	QC21- Final Inspection - Work Order Release	0.00							
165						<u>DAS</u> <u>21</u> <u>9-89</u>			DEC 14 2016
QC	Memo	0.00							
Quality Control	ADD "DSI9731-011 GHL UPGRADE KIT" TO THE SKIDTUBE ARC								

DEC 12 2016

① 16-12-13

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

Picklist Print

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Page 1

Work Order ID: 148829

148829

Parent Item: D145-762-013

D145-762-013

Parent Item Name: Skidtube with Standard Wearplates Fits LH or RH

Start Date: 7/8/2016

Required Date: 7/15/2016

Start Qty: 1.00

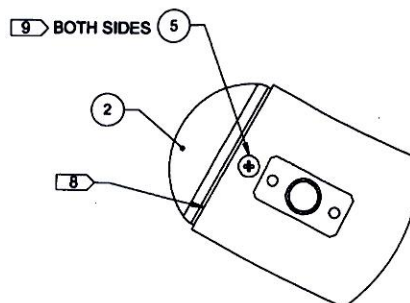
Required Qty: 1.00

Comments: IPP REV:A 13.04.24 NEW ISSUE DD VERF:JLM IPP REV:B
13.11.14 AS PER IIN REV.C DD VERF:JLM IPP REV:C 14.11.24 as
per ecn14-654/chg003 DD VERF:JLM IPP REV:D 15.06.11 IIN REV.D
DD VERF:JLM IPP REV:E 16.02.05 IIN REV.E (ecn16-514)
DD VERF:JLM

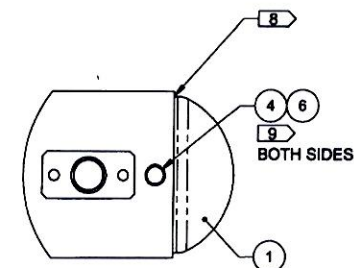
Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D145-762-013 *D145-762-013* Skidtube with Standard Wearplates Fits LH or RH		Manufactured	No				Each	0.0000	**	1			DAS 28 9-89
DSI 9731-011 *DSI 9731-011* GHL Upgrade		Manufactured	No				Each	0.0000	**	1			DEC 12 2016

B128541
B 148830 (1x) 16/08/08

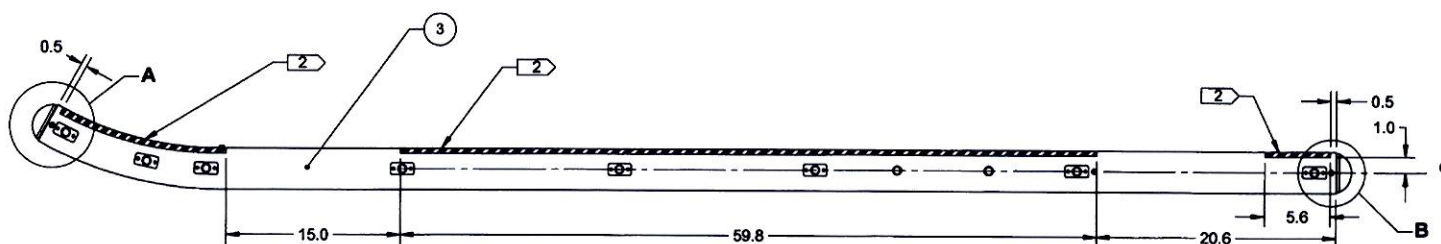
ITEM	QTY -041	P/N	DESCRIPTION
	X	D4680-041	SKIDTUBE
1	1	D2965	CAP
2	1	D2965-3	CAP
3	1	D4680-043	SKIDTUBE SUB ASSY
4	2	AN3C5A	BOLT
5	2	AN526C1032R10	SCREW
6	2	NAS1149C0332R	WASHER (AN960-10L)



DETAIL A
SCALE 4X



DETAIL B
SCALE 4X



D4680-041 SKIDTUBE

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 1.00 ABOVE CENTERLINE PER QSI 005 SECTION 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D4680-041" AND B/N PER QSI 044 METHOD 6.4 ON INNER RADIUS OF SKIDTUBE BEFORE INSTALLING D2965 CAP
- 7) WEIGHT: 18.56 lbs
- 8) SEAL FAYING SURFACES WITH SIKAFLEX -241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B-2 SEALANT
- 9) INSTALL FASTENERS WET WITH SIKAFLEX -241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B-2 SEALANT

E	GROUND HANDLING CROSSBOLT SPACERS NOW SWAGED, WAS WELDED. REMOVED D3492-055 PLUG ASSEMBLIES	AP	15.11.02
D	MOVED AFT GROUNDING FASTENER HOLE AFT 0.25 DUE TO INTERFERENCE, ADDED NOTE 9 (SHT 1), GROUNDING STRAP WASHERS NOW STAINLESS	AP	15.03.04
C	NAS1149C0332P WAS AN960-10L, AN526C1032R10 WAS AN526C1032-10, FWD GROUNDING STRAP FASTENER MOVED AFT (C5-3), Ø0.750 WAS Ø0.758 (B4-3).	AP	14.07.29
B	FWD CAP WAS D2965, NOW D2965-3, VARIOUS DIMENSIONAL CHANGES. D3492-055 PLUG ASSY WAS D3492-051, SWAGING DIMENSION NOW 0.650 WAS 0.661 (D6-2), ADDED DETAIL H (C2-3), MATERIAL D2962-150 WAS D2962-131 (A7-3), GROUND HANDLING THRU HOLES NOW WELDED, ADDED SECTION G-G (D3-2)	AP	13.09.10
A	NEW ISSUE	AP	13.02.13
REV.	DESCRIPTION	BY	DATE
DESIGN	AP		
DRAWN	AP		
CHECKED	AJS		
MFG. APPR.	DD		
APPROVED	WM		
DE APPR.	DS		
DATE	15.11.02		

DART AEROSPACE USA, INC.
EUGENE, OR

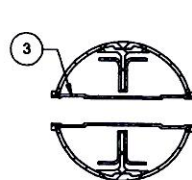
DRAWING NO. **D4680** REV. E
SHEET 1 OF 3
TITLE **SKIDTUBE** SCALE NTS

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RELEASED
2016-02-04
EAW 16-514

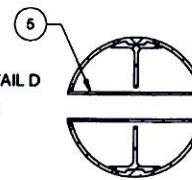
APPROVED

ITEM	QTY	P/N	DESCRIPTION
	X	D4680-043	SKIDTUBE SUB ASSY
1	1	D4680-1	SKIDTUBE
2	1	D4681-041	WEB ASSY
3	8	D4686-1	SPACER
4	16	D4753-1	DOUBLER
5	2	D5304-1	SPACER
6	3	AELS-1032-130	INSERT
7	3	AN3C4A	BOLT
8	32	MS20801AD4W3	RIVET, BLIND, CSK
9	3	NAS1149C0332R	WASHER (AN960-10L)



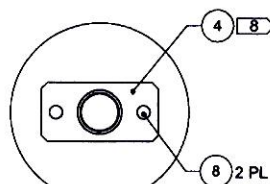
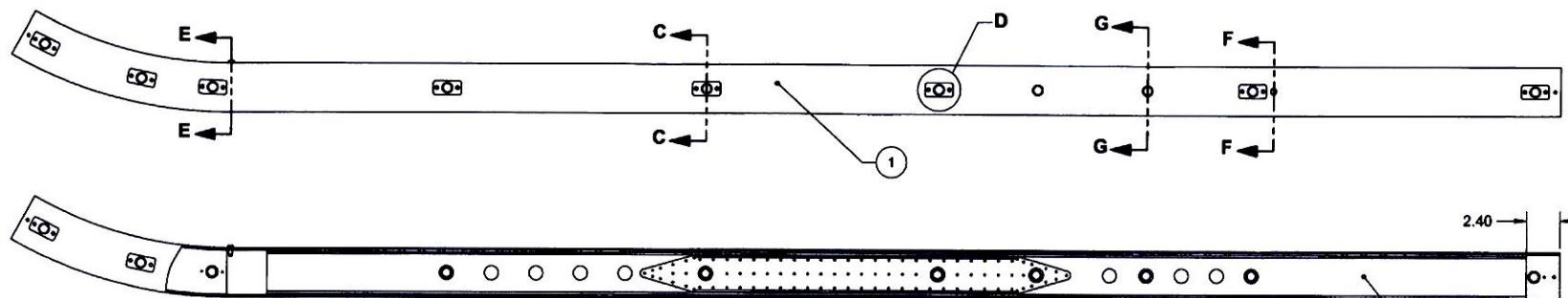
SECTION C-C
SCALE 4X
8 PL

INSTALL D4686-1 SPACER AS FOLLOWS (8 PL)
AFTER INSTALLING D4753-1 DOUBLERS PER DETAIL D
1. INSERT D4686-1 SPACER
2. SWAGE TO $\phi 0.650 +0.010/-0.000 \times 1.0$
3. TRIM/GRIND FLUSH PER QSI 002



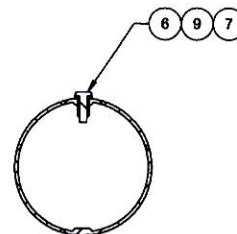
SECTION G-G
SCALE 4X
2 PL

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)
1. INSERT D5304-1 SPACER
2. SWAGE TO $\phi 0.565 +0.005/-0.000 \times 1.0$
3. OPEN THRU HOLE TO $\phi 0.625$

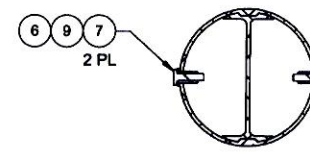


DETAIL D
16 PL (BOTH SIDES)
SCALE 4X

D4680-043 SKIDTUBE SUB ASSY



SECTION E-E
SCALE 2.5X



SECTION F-F
SCALE 2.5X

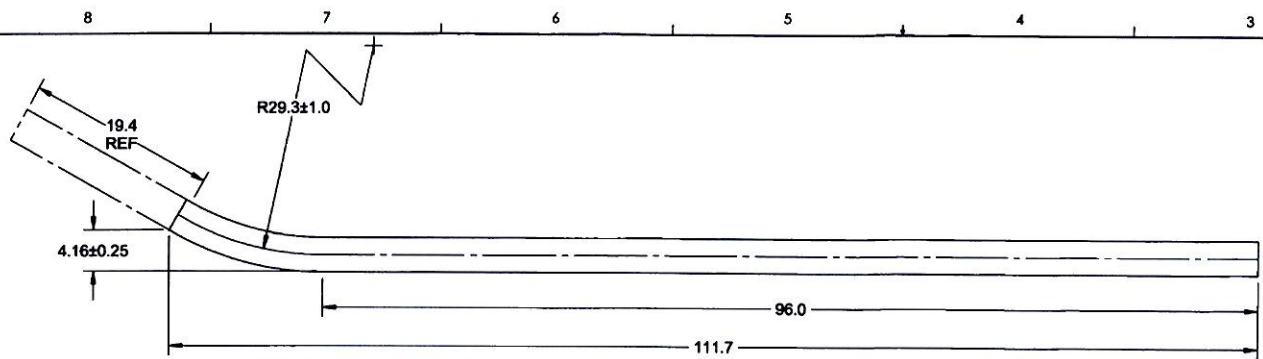
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: APPLY CHEMICAL CONVERSION COATING PER DART QSI 005 4.1 PRIOR TO INSTALLING D4681-041 WEB.
POWDER COAT WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 17.91 lbs
- 8) SEAL ALL MATING SURFACES USING PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT
- 9) INSERT D4681-041 WEB INTO D4680-1 SKIDTUBE IN LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX -241/291 ADHESIVE PER DART QSI 015
- 10) INSTALL D4686-1 SPACER AFTER INSTALLING D4753-1 DOUBLERS

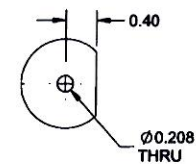
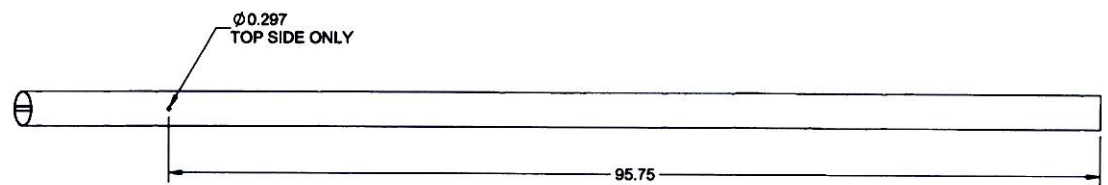
RELEASED
2016-02-04

APPROVED

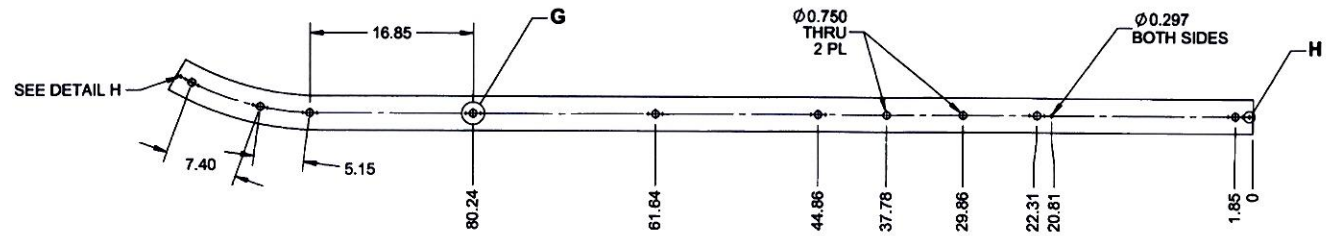
DESIGN	AP	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	AP		
CHECKED	AJS	DRAWING NO.	REV. E
MFG. APPR.	DD	D4680	SHEET 2 OF 3
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
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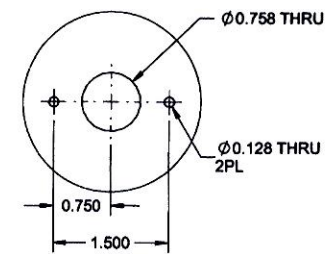
D4680-1 SKIDTUBE BENDING/TRIMMING DETAIL



DETAIL H
SCALE 8X
2 PL



D4680-1 SKIDTUBE DRILLING DETAIL



DETAIL G
SCALE 8X
8 PL

NOTES:

- 1) MATERIAL: MAKE FROM D2962-150 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 11.36 lbs

RELEASED
2016-02-04

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CHECKED	AJS	DRAWING NO.	REV. E
MFG. APPR.	DD	D4680	SHEET 3 OF 3
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
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DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D117-762 REV. D AND
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D117-762 REV. 3

REF FAA STC: SR01853SE

REF: TC LETTER OF ACCEPTANCE RDIMS-4374899

REF EASA STC: EASA.10017063

1.0 PURPOSE

The purpose of this Dart Service Instruction (DSI) is to replace the ground handling lugs (D3864-1 Bushings, AN6C51A Bolts and MS21043-6 Nuts) on the D145-762-XXX Skidtubes with a structurally superior lug design. This service instruction only affects D145-762-043/-013/-113 Skidtubes at change 004 or earlier and D145-762-045/-015/-115 Skidtubes at change 001. It is highly recommended to install DSI 9731-011 GHL Upgrade Kit in order to prevent early structural failure of the D145-762-XXX Skidtubes. Each DSI 9731-011 GHL Upgrade Kit provides the necessary parts and hardware for installation on one skidtube.

2.0 INSTALLATION

- 2.1 Remove (qty 4) D3864-1 Bushings per Skidtube by removing (qty 2) AN6C51A Bolts and (qty 2) MS21043-6 Nuts
- 2.2 Loosely install (qty 2) D5300-1 GHL Bushing & (qty 2) D5301-1 GHL Plug wet with Proseal 890 or MIL-S-8802 Class B2 Sealant in location shown in Figure 1.
- 2.3 Install AN6C52A Bolts and (qty 2) MS21043-6 Nuts in accordance with Figure 1. Clean up squeezed out Proseal and apply fillet seal around D5300-1 & D5301-1.
- 2.4 Torque AN6C52A Bolts 180 - 190 In-lbs (18.1 - 21.5 N-m).

3.0 PARTS LIST

QTY -011	PART NUMBER	DESCRIPTION
X	DSI 9731-011	GHL UPGRADE KIT
2	D5300-1	GHL BUSHING
2	D5301-1	GHL PLUG
2	AN6C52A	BOLT
2	MS21043-6	NUT

SH 148829
7/8/16

4.0 WEIGHT AND BALANCE

There is negligible weight and balance change associated with this modification.

A	NEW ISSUE	AP	15.11.02
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE, LTD EUGENE, OR	
DRAWN	AP		
CHECKED	DB.	DRAWING NO.	REV.A
MFG. APPR.	N/A	DSI 9731	SHEET 1 OF 2
APPROVED	CH	TITLE	SCALE
DE APPR.	CH	GHL UPGRADE KIT	NTS
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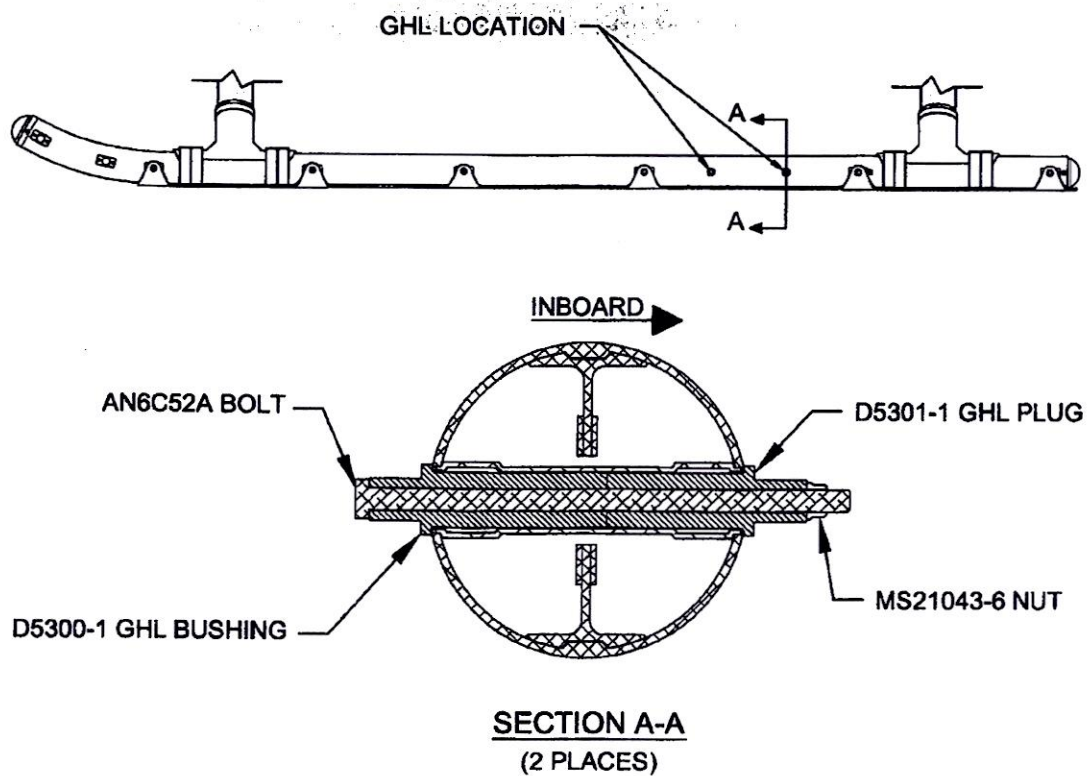


FIGURE 1 - GHL UPGRADE INSTALLATION

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DRAWN	AP		
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MFG. APPR.	N/A	DSI 9731	SHEET 2 OF 2
APPROVED	CM	TITLE	SCALE
DE APPR.		GHL UPGRADE KIT	NTS
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